



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 663-2005

**2005 BRIDGE MAINTENANCE - BEARING REFURBISHMENT AND RELATED
WORKS**

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PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

B1.1 2005 BRIDGE MAINTENANCE - BEARING REFURBISHMENT AND RELATED WORKS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, November 17, 2005.

B2.2 Bid Submissions determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.

B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

B3.1 Further to GC.2.01, the Contract Administrator or an authorized representative will be available at the bridge sites to provide Bidders access to the sites. Call the Contract Administrator's representative Mr. Mark Doucet at 453-2301 to make an appointment for either or both sites. More than one Bidder may have the same appointment. The following dates and times are available:

(a) Midtown Bridge

(i) Appointments will be made for either 9:30 or 11:00 a.m. on Wednesday, November 9, 2005.

(ii) Access will be by the City of Winnipeg underbridge crane. Body harnesses will be provided.

(b) Fort Garry Bridge

(i) Appointments will be made for either 1:30 or 2:30 p.m. on Wednesday, November 9, 2005.

(ii) The meeting location will be the west end of the bridge at the north abutment.

B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3.2 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. ADDENDA

B5.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least three (3) Business Days prior to the Submission Deadline.

B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative shall base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID SUBMISSION

- B7.1 The Bid Submission consists of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices.
- B7.2 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.2.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.3 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.4 Bid Submissions shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Branch
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
- (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
- (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.

B8.4.2 All signatures shall be original.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid Submission and the Contract, when awarded, shall be both joint and several.

B9. PRICES

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10. QUALIFICATION

B10.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
- (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
- (c) be financially capable of carrying out the terms of the Contract;
- (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
- (e) have successfully carried out work, similar in nature, scope and value to the Work;

- (f) employ only Subcontractors who:
 - (i) are responsible and not suspended, debarred or in default of any obligation to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>); and
 - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;
- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba).

B10.2 The Bidder shall be prepared to submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.3 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bid Submissions will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.

B11.1.1 Bidders or their representatives may attend.

B11.2 After the public opening, the names of the Bidders and their Total Bid Prices as read out (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B11.4 The Bidder is advised that any information contained in any Bid Submission may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B12. IRREVOCABLE BID

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

B13. WITHDRAWAL OF BIDS

- B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B13.1.1 Notwithstanding GC:23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials shall:
- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
 - (b) open the Bid Submission to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.
- B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

B14. EVALUATION OF BIDS

- B14.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements if the interests of the City so require.
- B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.
- B14.4 Further to B14.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B15. AWARD OF CONTRACT

- B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.
- B15.4 Notwithstanding GC:4, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.
- B15.5 The Contract, as defined in GC:1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for Construction Contracts* (Revision 2000 11 09) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for Construction Contracts* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for Construction Contracts*, these Supplemental Conditions are applicable to the Work of the Contract.
- D1.2 The General Conditions are amended by striking out "The City of Winnipeg Act" wherever it appears in the General Conditions and substituting "The City of Winnipeg Charter".
- D1.3 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.4 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.5 The General Conditions are amended by deleting GC:6.16 and GC:6.17. The City of Winnipeg is now within the jurisdiction of the Manitoba Ombudsman pursuant to The Ombudsman Act.

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of bridge bearing refurbishment.
- D2.2 The major components of the Work are as follows:
- (a) Refurbish two bearings at the Midtown Bridge.
 - (b) Refurbish three bearings at the Fort Garry Bridge.
 - (c) Construct drainage trenches in the floors of three of the four Fort Garry Bridge abutments.

D3. CONTRACT ADMINISTRATOR

- D3.1 The Contract Administrator is Dillon Consulting Limited, represented by:
- Mr. Mark Doucet
Project Engineer
200 - 895 Waverley Street
Winnipeg, Manitoba R3T 5P4
Telephone No. (204) 453-2301
Facsimile No. (204) 452-4412
- D3.2 At the pre-construction meeting, Mr. Doucet will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D4. CONTRACTOR'S SUPERVISOR

- D4.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D5. NOTICES

- D5.1 Except as provided for in GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor

shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.

D5.3 All notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

The City of Winnipeg
Chief Administrative Officer Secretariat
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174

D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

The City of Winnipeg
Corporate Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

SUBMISSIONS

D6. INSURANCE

D6.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) all inclusive, with The City of Winnipeg being added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, an unlicensed motor vehicle liability and a products and completed operations endorsement to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance.

D6.2 Deductibles shall be borne by the Contractor.

D6.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.

D6.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D7. SAFE WORK PLAN

- D7.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.
- D7.2 The Safe Work Plan should be prepared and submitted in a format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

D8. PERFORMANCE SECURITY

- D8.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
 - (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
 - (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.
- D8.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.
- D8.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of Purchase Order and prior to the commencement of any Work on the Site.

SCHEDULE OF WORK

D9. COMMENCEMENT

- D9.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D9.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
 - (ii) evidence of the workers compensation coverage specified in GC:6.14;
 - (iii) evidence of the insurance specified in D6;
 - (iv) the performance security specified in D8.
 - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D9.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Purchase Order.

D10. SUBSTANTIAL PERFORMANCE

D10.1 The Contractor shall achieve Substantial Performance by December 23, 2005.

D10.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D10.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D11. TOTAL PERFORMANCE

D11.1 The Contractor shall achieve Total Performance by December 23, 2005.

D11.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D11.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

CONTROL OF WORK

D12. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D12.1 Further to GC:6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

WARRANTY

D13. WARRANTY

D13.1 Notwithstanding GC:13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to GC:13.2.1 or GC:13.2.2, in which case it shall expire when provided for thereunder.

FORM H1: PERFORMANCE BOND
(See D7)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____ dollars (\$_____.)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee dated the

_____ day of _____, 20____, for:

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2005 BRIDGE MAINTENANCE - BEARING REFURBISHMENT AND RELATED WORKS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

- (a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
- (b) perform the Work in a good, proper, workmanlike manner;
- (c) make all the payments whether to the Obligee or to others as therein provided;
- (d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
- (e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)
(See D7)**

(Date)

The City of Winnipeg
Corporate Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 663-2005

2005 BRIDGE MAINTENANCE - BEARING REFURBISHMENT AND RELATED WORKS

Pursuant to the request of and for the account of our customer,

(Name of Contractor)

(Address of Contractor)

WE HEREBY ESTABLISH in your favour our irrevocable Standby Letter of Credit for a sum not exceeding in the aggregate

_____ Canadian dollars.

This Standby Letter of Credit may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you. It is understood that we are obligated under this Standby Letter of Credit for the payment of monies only and we hereby agree that we shall honour your demand for payment without inquiring whether you have a right as between yourself and our customer to make such demand and without recognizing any claim of our customer or objection by the customer to payment by us.

The amount of this Standby Letter of Credit may be reduced from time to time only by amounts drawn upon it by you or by formal notice in writing given to us by you if you desire such reduction or are willing that it be made.

Partial drawings are permitted.

We engage with you that all demands for payment made within the terms and currency of this Standby Letter of Credit will be duly honoured if presented to us at:

(Address)

and we confirm and hereby undertake to ensure that all demands for payment will be duly honoured by us.

All demands for payment shall specifically state that they are drawn under this Standby Letter of Credit.

Subject to the condition hereinafter set forth, this Standby Letter of Credit will expire on

(Date)

It is a condition of this Standby Letter of Credit that it shall be deemed to be automatically extended from year to year without amendment from the present or any future expiry date, unless at least 30 days prior to the present or any future expiry date, we notify you in writing that we elect not to consider this Standby Letter of Credit to be renewable for any additional period.

This Standby Letter of Credit may not be revoked or amended without your prior written approval.

This credit is subject to the Uniform Customs and Practice for Documentary Credit (1993 Revision), International Chamber of Commerce Publication Number 500.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- E1.1.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.1.3 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
B114-05-01	Midtown Bridge Bearing Refurbishment
B173-05-01	Fort Garry Bridge Bearing Refurbishment and Drainage Trench Works, Sheet 1 of 2
B173-05-02	Fort Garry Bridge Bearing Refurbishment and Drainage Trench Works, Sheet 2 of 2

E2. BRIDGE BEARING REFURBISHMENT

- E2.1 Description
- (a) The Work covered under this item shall include all operations relating to bridge bearing modifications in accordance with this Specification and as shown on Drawing Nos. B114-05-01, B173-05-01, and B173-05-02.
- (b) The Work to be done by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.
- E2.2 Original Bearings
- E2.2.1 General
- (a) Shop drawings of the original bearings of the Midtown Bridge are available but show limited information and include only the thickness of the PTFE (teflon) and stainless steel sheets. The shop drawings of bearings of the Fort Garry Bridge are not available at all.
- E2.2.2 Midtown Bridge Bearing Supplier
- (a) The original supplier of these bearings was W.G. Bearings Inc. of Burlington, Ontario. The current supplier is:
Wercholz Canada Inc.
95 Cascade Street, Unit 2
Hamilton, Ontario L8E 3B7
Phone: (905) 560-5064, Fax: (905) 560-7070
- (b) The contact person there is Robert Fitzgerald, P. Eng. - robert.fitzgerald@bellnet.ca

E2.2.3 Fort Garry Bridge Bearing Supplier

- (a) The original supplier of these bearings was probably Watson Bowman Acme according to the current supplier of such bearings who is:

Watson Bowman Acme (a division of Degussa)

95 Pineview Drive

Amherst, NY, USA

14228-2166

Phone: 716-691-8162

- (b) The Canadian contact sales manager is Mr. Ken Heuff at 416-254-0045.

E2.3 Materials

E2.3.1 Structural Steel

- (a) Structural steel shall be in accordance with CSA G40.21 Grade 300W. The stiffener plates at the Fort Garry Bridge are to be hot-dip galvanized or metallized.

E2.3.2 Galvanizing Touch-up and Field-Applied Galvanizing

- (a) Field-applied galvanizing, to touch-up damaged hot-dip galvanizing, metallizing, or field welds, shall be done with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780-80 for "Repair of Damaged Hot-Dip Galvanized Coatings." Approved products are Galvalloy as manufactured by Metalloy Products Company, P.O. Box No. 3093, Terminal Annex, Los Angeles, California, and Welco Gal-Viz Galvanizing Alloy, as manufactured by Thermocote Welco, Highway 161 York Road, Kings Mountain, North Carolina. Locally, both products are available from Welder Supplies Limited, 25 McPhillips Street, Winnipeg.

E2.3.3 PTFE Sheets

- (a) The PTFE (teflon) sheets are to be 100% virgin polymer material conforming to ASTM Standard 1457. Midtown Bridge sheets are to be 7 mm thick. Thickness of Fort Garry Bridge sheet is unknown and will be determined after removal, field measuring, and in consultation with the manufacturer and the Contract Administrator.

E2.3.4 PTFE Disc Adhesive

- (a) The PTFE disc adhesive shall be supplied in accordance with the disc manufacturer's directions.

E2.3.5 Stainless Steel Sheets

- (a) The stainless steel sheets shall be supplied in accordance with the bearing manufacturer's directions. Midtown Bridge sheets are to be 2 mm thick. Thickness of Fort Garry Bridge sheet is unknown and will be determined after removal, field measuring, and in consultation with the manufacturer and the Contract Administrator.

E2.4 Construction Methods

E2.4.1 Purpose of Refurbishments

- (a) The bearings indicated on the Drawings require refurbishment primarily because some of the PTFE (teflon) sheets have been squeezed out of position. It is not known why this has occurred. At the same time as the PTFE will be replaced, the stainless steel sliding surfaces will be replaced and the bearing finish restored. This Specification describes refurbishment methods of the bearings. In lieu of refurbishment, the Contractor may elect to supply new bearings.

E2.4.2 Submission

- (a) The Contractor shall submit a description of the jacking and bearing refurbishment methods he intends to use to the Contract Administrator for review at least five (5) days prior to starting any structure jacking or bearing refurbishment.

E2.4.3 Stiffener Plates

- (a) At the Fort Garry Bridge, stiffener plates are to be installed in the temporary jacking locations prior to jacking. They are to be installed by welding and shall be left permanently in place. Welding shall be done in accordance with CSA W59, "Welded Steel Construction." Coat all welds after installation with field-applied galvanizing.

E2.4.4 Field-Applied Touch-up Galvanizing

- (a) Any areas of damaged galvanizing or metallizing on miscellaneous steel items shall receive field-applied touch-up galvanizing.
- (b) Surfaces to receive touch-up galvanizing shall be cleaned using a wire brush, a light grinding action, or mild blasting to remove loose scale, rust, paint, grease, dirt, or other contaminants. Preheat the surface to 315°C and wire brush the surface during preheating. Rub the cleaned preheated area with the repair stick to deposit an evenly distributed layer of zinc alloy. Spread the alloy with a wire brush, spatula, or similar tool. Field-applied galvanizing shall be blended into existing galvanizing of surrounding surfaces and shall be buffed and polished if required to match the surrounding surfaces. Care shall be taken to not overheat surfaces beyond 400°C and to not apply direct flame to the alloy rods.

E2.4.5 Maintenance of Expansion/Contraction Capability

- (a) The Contractor's temporary supports must be capable of allowing the normal expansion/contraction movements of the bridge superstructure to take place while they are being used.

E2.4.6 Maintenance of Traffic

- (a) Traffic is to be maintained across the structure during the Work of this section. If desired, the Contractor may close one lane of traffic at a time outside of rush hours during the bearing removal or installation at no additional cost to the Contract.

E2.4.7 Bearing Removals

- (a) Before any jacking takes place, the height of the supported girder is to be measured with respect to the concrete bearing surface at various locations and recorded. The intent of this is to produce the same girder elevation when it is placed on the temporary bearing.
- (b) The bearing removals are to be done with a minimum of jacking. The structures may be raised somewhat for the procedure, but no more than 6 mm from their current locations unless otherwise approved by the Contract Administrator.
- (c) Care should be taken not to overload adjacent bearings.
- (d) Temporary bearings are to be placed under the girder while the permanent bearings are out. The Contractor shall provide a temporary bearing design for the Contract Administrator's review. An acceptable temporary bearing would consist of steel plate between elastomeric sheets. The temporary bearings may be fabricated/assembled by the Contractor or may be purchased from commercial bearing manufacturers. Steel and elastomeric sheets should have properties equal to or better than that provided by commercial bridge bearing manufacturers of such bearings.
- (e) An acceptable size of such a temporary bearing would be 750 W x 750 L x 125 H. The additional thickness of bearing required to fill the full depth could be created by additional steel shims. Other temporary bearing types will be considered.

- (f) When the girder load is removed from the jacks and placed on the temporary bearing, the girder elevation shall be within 3 mm of the original girder elevation as determined before the original bearing was removed.

E2.4.8 Bearing Refurbishment

(a) General

- (i) Bearing refurbishment shall consist of work as follows:

	Total Number for All Bearings		
	Midtown		Ft. Garry
	MK 10	MK 8	
Replacement of damaged PTFE (teflon) sheets	2	1	3
Replacement of damaged stainless steel sheets	1	0	3
Polish aluminum male sphere	1	1	0
Refinish all non-stainless steel metal parts by metallizing	No	No	Yes

- (ii) For the Fort Garry Bridge, because shop drawings are not available, the sizes of the PTFE and stainless steel sheets cannot be determined until the bearings are removed, even then, consultation with the bearing manufacturer may be required to establish these sizes.

(b) Replace PTFE Sheets

- (i) If a particular PTFE sheet is in next to new condition and is fully adhered to its substrate, no work on it will be required. Those that are scratched, extended, cracked, or otherwise damaged or missing will require replacement. It will likely be possible to order the flat sheet PTFE from the manufacturer and install it locally. However, the Contractor may elect to ship the spherical bearing elements, complete with their PTFE sheets, to the manufacturer so that the manufacturer can size and apply the new spherical PTFE sheets.

- (ii) The general description of the PTFE replacement method follows:

- ◆ Remove old PTFE being careful not to damage the existing convex plate surface.
- ◆ Blast clean the surface to which the new PTFE is to be bonded removing all of the old adhesive.
- ◆ Apply new adhesive to etched side of PTFE and to the blast-cleaned concave plate surface.
- ◆ Place PTFE over concave surface and use convex plate to push the PTFE disc into place.
- ◆ Clamp the concave and convex plates together for a period of 24 hours or until the adhesive has set, whichever is longer.
- ◆ Remove clamps, separate plates, and check for any voids. Remove excess adhesive.
- ◆ Trim PTFE if required.
- ◆ Ensure PTFE and convex surfaces are clean prior to reinstalling bearing.

- (iii) The above description is for the replacement of the PTFE on a concave surface. The same general methods shall be used where the surfaces are flat.

(c) Repair or Replace Damaged Stainless Steel Plates

- (i) Inspect with the Contract Administrator all of the stainless steel sliding surfaces.
- ◆ Assume all are heavily abraded and require replacement. Replacement shall be with a plate of the exact thickness as the original and similar

properties. Install the replacement plates using a full perimeter seal weld using the "TIG" process.

- (d) Zinc Metallize Steel Bearings
 - (i) For the Ft. Garry Bridge, all steel surfaces of the bearings, except for the stainless steel surfaces, are to be metallized in accordance with Section E3 of this Specification.
 - (ii) The Midtown Bridge bearings steel surfaces do not require refinishing.
- (e) Reinstall Bearings
 - (i) Reinstall the bearings being careful not to overload the adjacent bearings. Set bearings in the proper location relative to the bridge superstructure temperature. Consult with the Contract Administrator on the location.
- (f) The MK 10 bearing at the Midtown Bridge was originally installed incorrectly with opposing bolts on the lower steel masonry plate and the upper steel top plate. As a result, even by raising the structure by 6 mm, the bolts interfere with each other and cannot be removed to free the bearing components for removal. Therefore, additional measures will be required to remove this bearing for refurbishment. Two options are presented:
 - (i) Option 1: Remove the plug welds in the lower steel masonry plate attaching it to the concrete pier. Loosen off the upper bolts and pull the bearing out. Before replacing the bearing, turn the steel female sphere 45 degrees and drill and tap new holes into the lower steel masonry plate. This new location of the lower bolts will move them from lining up and opposing the upper bolts. When re-installing the bearing after refurbishment, the anchor studs from the pier are to be extended as necessary and plug welded again into the lower steel masonry plate. New grout will likely be required under the steel masonry plate.
 - (ii) Option 2: This option does not require the removal of the lower steel masonry plate but requires the installation of new holes in that plate with extremely limited space. This method will only work if an angle drill and an angle tap can be used to install those new holes. Cut off enough bolts, either upper or lower, to remove the bearing components between the lower masonry plate and the bearing plate (sole plate) welded to the underside of the girder flange. As in Option 1 above, turn the steel female sphere 45 degrees and drill and tap new holes into the lower steel masonry plate. This new location of the lower bolts will move them from lining up and opposing the upper bolts.

The Contractor may propose an alternative method for consideration by the Contract Administrator.

E2.5 Measurement and Payment

E2.5.1 The refurbishment of bridge bearings will be measured on a unit basis and paid for at the Contract Unit Price for the "Items of Work listed herebelow. The units to be paid for will be the number of bearings refurbished in accordance with this Specification and accepted by the Contract Administrator.

Items of Work:

Bridge Bearing Refurbishment

- i) Midtown Bridge Bearings
 - a) MK 10 Bearing
 - b) MK 8 Bearing
- ii) Fort Garry Bridge Bearings

E3. ZINC METALLIZING OF BEARINGS

E3.1 Description

- (a) This Specification shall cover the surface preparation, zinc metallizing, and surface sealing of structural steel of the bearings, as specified herein.
- (b) The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E3.2 Materials

E3.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials as set forth in this Specification. All materials shall be subject to inspection and approval of the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

E3.2.2 Zinc Metallizing

- (a) The zinc metallizing shall consist of 99.9% zinc wire 3 mm in diameter, as approved by the Contract Administrator.
- (b) All zinc metallizing material shall be delivered in the original unopened spools with manufacturer's labels intact. Any material that has been damaged, livered, jelled, or otherwise deteriorated shall not be used. The Contractor shall provide, if and when requested by the Contract Administrator, a listing, updated weekly, of the weight and number of spools and the type of zinc metallizing material (as identified by a mill test report and corresponding heat number for each spool) received from the zinc metallizing manufacturer on this project.
- (c) All material shall be stored under cover in a secured place as approved by the Contract Administrator, and shall be kept within storage temperature limitations recommended by the manufacturer.

E3.2.3 Seal Coat

- (a) Clear polyurethane seal coat shall be at least 60% solids, shall be compatible with the zinc metallizing, as accepted by the Contract Administrator. The Contractor shall provide a written statement clearly identifying that the proposed product is suitable for its intended use and is being applied in an acceptable manner prior to undertaking the work.

E3.2.4 Abrasive for Blast Cleaning

- (a) The blast cleaning abrasive shall be free of corrosion-producing contaminants. Sand abrasive shall be oil free. Slag abrasive shall contain no more than 0.1% oil by weight. The blast cleaning abrasive and grit size employed shall be capable of achieving an average profile peak-to-valley height not exceeding 3.0 mils.

E3.2.5 Incidental and Miscellaneous Materials

- (a) Incidental and miscellaneous materials utilized in undertaking the surface preparation, zinc metallizing, and surface sealing works shall be supplied strictly in accordance with the manufacturer's guidelines, as approved in advance by the Contract Administrator, and in accordance with these Specifications.
- (b) The use of all such materials shall be reviewed with the Contract Administrator to ensure conformance with the Specification, prior to the use of same in the works. The Contract Administrator's decision in these matters shall be final.

E3.3 Equipment

E3.3.1 Surface Preparation Equipment

- (a) All equipment shall be of a type approved by the Contract Administrator and capable of preparing the steel surfaces in accordance with these Specifications.
- (b) All compressed air services shall have oil and moisture separators, attached and functional, properly designed and sized to allow delivered air at the blasting or coating nozzle to be free of oil and moisture, and of sufficient pressure to accomplish the associated work efficiently and effectively. The tanks on the air compressors and the moisture separators shall be drained at the end of each working shift. Prior to abrasive blast cleaning, the Contractor shall demonstrate to the Contract Administrator that the air is moisture free. Air-driven power tools shall be properly lubricated in accordance with the respective manufacturer's instructions, but in such a manner that lubrication is not deposited onto the surface being prepared.

E3.3.2 Zinc Metallizing Equipment

- (a) The zinc metallizing coating equipment shall be designed such that the coating material will be applied uniformly to all surfaces in the locations required, as shown on the Drawings and approved by the Contract Administrator, and shall be kept in good working order.

E3.4 Construction Methods

E3.4.1 Scope of Work

- (a) The works include surface preparation, application of zinc metallizing, and surface sealing of all surfaces of the structural steel as shown on the Drawings and described in this Specification.

E3.4.2 Surface Preparation

- (a) General
 - (i) Prior to actual work commencement, representative trial areas shall be cleaned in accordance with SSPC Specifications SP:6.
 - (ii) The degree of cleaning and surface profile (where required) achieved, once accepted by the Contract Administrator, will become the standard for all subsequent surface preparations. Furthermore, the Contractor shall prepare and maintain blasted reference panels for the purpose of calibrating magnetic dry film thickness gauges as specified in SSPC Specification PA2.
- (b) Surface Cleaning
 - (i) All oil and grease shall be removed manually with solvent cleaning in accordance with SSPC Specification SP:1, "Solvent Cleaning," before any blast cleaning operations or any zinc metallizing application.
- (c) Blast Cleaning Operation
 - (i) The Contractor shall prepare the structural steel immediately prior to zinc metallizing by blast cleaning, in accordance with current SSPC Specifications SP:6. The prepared surface shall have a 3.0 to 4.0 mil profile.
 - (ii) No rust scale shall remain within the designated areas.
 - (iii) Use dry abrasive blasting only in accordance with all applicable regulations.
 - (iv) Wet blasting will not be permitted.
 - (v) Any areas shielded or hidden from the effects of sandblasting shall be cleaned manually or by other means to the satisfaction of the Contract Administrator, and must meet SSPC SP:11.

- (vi) The blasting shall be performed so as not to damage or contaminate any previously coated areas.
 - (vii) Freshly prepared steel shall be zinc metallized as quickly as practical thereafter. However, if the freshly prepared steel begins to rust prior to application of the zinc metallizing, the steel must be reblasted to meet the specified SSPC Specification.
 - (viii) Where the zinc metallized surface has been damaged or rejected, remove loose or nonadherent coating by hand cleaning or other approved techniques. Cleaning shall be performed approximately 20 mm beyond the damaged areas in all directions or until a soundly adhered zinc metallizing coating is obtained.
 - (ix) The Contractor shall prepare only as much surface as can be zinc metallized the same day. If unusual circumstances occur which prevent all prepared surfaces from being zinc metallized the same day, a light sandblast will be required over all nonzinc metallized surfaces to achieve specified surface preparation.
- (d) Blast Cleanup Operations
- (i) Following all blast cleaning operations and prior to the Contract Administrator's inspection, all surfaces involved shall be blown off with compressed air or cleaned by vacuum for the purpose of removing any and all traces of blast products from the surface, and for the removal of abrasive from all pockets and corners.
 - (ii) Following surface preparation cleanup operations, the Contractor shall immediately notify the Contract Administrator so that an inspection can be made prior to the application of any zinc metallizing material.
 - (iii) The zinc metallizing material shall be applied as soon as possible after the surface preparation cleanup operation as approved by the Contract Administrator.
- (e) Surface Testing and Inspection
- (i) The Contractor shall provide the Contract Administrator with a minimum of four hours notice prior to zinc metallizing to allow for testing and inspection of prepared surfaces.
 - (ii) Immediately following blast cleaning and cleanup operations, the Contractor shall notify the Contract Administrator in order that a chemical analysis of the blasted steel and that a surface profile inspection be carried out. No zinc metallizing shall be applied to any prepared surface until acceptance of complete surface preparation of any area has been given by the Contract Administrator.
- (f) Application of Zinc Metallizing
- (i) The zinc metallizing coating is to be applied to all structural steel to a minimum thickness of 12 mils for all components of the steel. The full coating thickness shall be achieved in two or more applications.
 - (ii) Absolutely no zinc metallizing shall be applied until the prepared surface has been inspected by the Contract Administrator and approved. Failure to follow this requirement will necessitate the complete removal, by blast cleaning, of all coating placed over surfaces not inspected and approved.
 - (iii) No deviation from this requirement will be tolerated.
 - (iv) Zinc metallizing shall be applied as soon as possible after the surface preparation cleanup operation, as approved by the Contract Administrator.
 - (v) Zinc metallizing shall be applied in accordance with the manufacturer's instructions. The specified zinc metallizing system shall be applied as soon as possible after the surface preparation cleanup operation.

- (vi) No zinc metallizing shall be applied when the air and/or steel temperatures are at or below 4°C or when the metal has absorbed sufficient heat (above 50°C) to cause the zinc metallizing to blister and produce a porous film or when it is possible the air temperature may drop below 0°C before the zinc metallizing is dry.
 - (vii) Zinc metallizing shall not be applied to damp or frosty surfaces, nor when there is a risk of dew on the surfaces to be coated. Using a sling powdered wet and dry bulb psychrometer, zinc metallizing shall not commence unless the dry bulb temperature exceeds the wet bulb temperature by more than 3°C (5°F) and the ambient temperature is rising.
 - (viii) Zinc metallizing that becomes oxidized, thickened, ropy, lumpy, or dirty shall be discarded.
 - (ix) The zinc metallizing thickness specified herein shall be the thickness over the peaks of the blast profile. To ensure this thickness is being measured, dry film thickness measurements and gauge calibration methods shall be as described in SSPC Specification PA2.
 - (x) Electrical arc equipment is the zinc metallizing coating equipment preference for this work. The steel shall not be heated to a temperature exceeding 350°C. The zinc metallizing shall be applied at a minimum thickness of 12 mils. The zinc metallizing thickness specified herein shall be the thickness over the peaks of the blast profile. To ensure this thickness is measured, thickness measurements and gauge calibration methods shall be as described in SSPC Specification PA2. Additional layers of zinc metallizing material shall be applied until the minimum specified thickness is attained. After zinc metallizing is completed and approved by the Contract Administrator, a clear seal coat shall be applied to the surface as specified hereinafter.
- (g) Application of Seal Coat
- (i) All structural steel truss members will receive seal coat. The clear seal coat shall be applied in two coats to fill in and seal off all the natural pores of the zinc metallizing coated surface. The first coat shall be reduced down to 25% solids to allow the coating to penetrate into the zinc metallized steel. The first coat shall be allowed to dry for a minimum of one hour. The full coat shall be applied at a maximum rate of 2 to 3 mil dry film thickness equivalent to 5 mil wet.
 - (ii) Seal coat coating shall not be applied over a previous coat which is not dry.

E3.5 Repair and Touch-up

E3.5.1 General

- (a) Repair and touch-up all damaged zinc metallizing using zinc metallizing material similar to the original materials. Each coat shall be dry before applying subsequent coats.
- (b) All repairs and touch-ups shall be carried out at the Contractor's expense.

E3.6 Quality Control

E3.6.1 General

- (a) All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials through to final acceptance of the specified work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given.

E3.7 Measurement and Payment

E3.7.1 Zinc metallizing will be incidental to the work of Section E2 "Bridge Bearing Refurbishment." No additional measurement and payment will be made.

E4. DRAINAGE TRENCH WORKS

E4.1 Description

E4.1.1 The Work covered under this item shall include all operations relating to the installation of drainage trenches in the abutment floors of the Fort Garry Bridge in accordance with this Specification and as shown on Drawing No. B173-05-01.

- (b) The Work to be done by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E4.2 Materials

E4.2.1 Steel Pipe

- (a) Steel pipe shall be Schedule 40 hot-dip galvanized steel pipe of the size shown on the Drawings, complete with 9-gauge steel wire mesh (25 x 25) on the outside opening. Mesh also to be hot-dip galvanized.

E4.2.2 Flexible Joint Sealant

- (a) Flexible joint sealant for all horizontal, vertical, and sloping joints shall be guaranteed non-staining, grey polyurethane, accepted by the Contract Administrator and applied in strict accordance with the details shown on the Drawings and the manufacturer's instructions including appropriate primers if recommended. Accepted products are Vulkem 116 by Mameco, Sonolastic NP 1 by Sonneborn, Sikaflex-1a by Sika, or equal as accepted by the Contract Administrator.

E4.3 Construction Methods

- (a) Construct the trenches in the abutment floors in accordance with the details on the Drawings. Following construction, demonstrate to the Contract Administrator that the trenches fully drain. Clean up all duct and debris when the work is completed, including any that may have entered the girders from these works.

E4.4 Measurement and Payment

- (a) The construction of drainage trenches will be measured on a unit basis and paid for at the Contract Unit Price for "Construct Drainage Trenches." The units to be paid for will be the number of drainage trenches constructed in accordance with this Specification and accepted by the Contract Administrator. One drainage trench is required at each of the three girder ends.